EJERCICIOS RADICALES FICHA 4

Calcula y simplifica:

a) $2\sqrt{45} - 3\sqrt{5} + 4\sqrt{20}$

b) $2\sqrt{8} + 5\sqrt{72} - 7\sqrt{18} - \sqrt{50}$

c) $\sqrt[6]{\frac{2}{3}} \cdot \sqrt[3]{\frac{3}{2}}$

d) $\frac{1}{3}\sqrt[3]{15} \cdot 5\sqrt[3]{18}$

e) $\left(\sqrt{2}\right)^2$

f) $\left(1 - \sqrt{2}\right)^2$

g) $\left(\sqrt{2} + \sqrt{3}\right)\left(\sqrt{2} - \sqrt{3}\right)$

h) $\left(2 + 2\sqrt{3}\right)^2$

i) $\left(4 + \sqrt{3}\right)\left(4 - \sqrt{3}\right)$

j) $\sqrt[3]{\sqrt{\sqrt[4]{2^3}}}$

SOLUCIONES

a)

$$2\sqrt{45} - 3\sqrt{5} + 4\sqrt{20} = 2\sqrt{3^2 \cdot 5} - 3\sqrt{5} + 4\sqrt{2^2 \cdot 5} = 6\sqrt{5} - 3\sqrt{5} + 8\sqrt{5} = 11\sqrt{5}$$

b) $2\sqrt{8} + 5\sqrt{72} - 7\sqrt{18} - \sqrt{50} = 2\sqrt{2^3} + 5\sqrt{2^3 \cdot 3^2} - 7\sqrt{3^2 \cdot 2} - \sqrt{5^2 \cdot 2} =$

$= 4\sqrt{2} + 30\sqrt{2} - 21\sqrt{2} - 5\sqrt{2} = 8\sqrt{2}$

c) $\sqrt[6]{\frac{2}{3}} \cdot \sqrt[3]{\frac{3}{2}} = \sqrt[6]{\frac{2}{3}} \cdot \sqrt[6]{\frac{3^2}{2^2}} = \sqrt[6]{\frac{2 \cdot 3^2}{3 \cdot 2^2}} = \sqrt[6]{\frac{3}{2}}$

d) $\frac{1}{3}\sqrt[3]{15} \cdot 5\sqrt[3]{18} = \frac{5}{3}\sqrt[3]{3 \cdot 5} \cdot \sqrt[3]{2 \cdot 3^2} = \frac{5}{3}\sqrt[3]{5 \cdot 2 \cdot 3^3} = \frac{5}{3} \cdot 3\sqrt[3]{5 \cdot 2} = 5\sqrt[3]{10}$

e) $\left(\sqrt{2}\right)^2 = \sqrt{2^2} = 2$

f) $\left(1 - \sqrt{2}\right)^2 = 1^2 - 2 \cdot 1 \cdot \sqrt{2} + \left(\sqrt{2}\right)^2 = 1 - 2\sqrt{2} + 2 = 3 - 2\sqrt{2}$

g) $\left(\sqrt{2} + \sqrt{3}\right)\left(\sqrt{2} - \sqrt{3}\right) = \left(\sqrt{2}\right)^2 - \left(\sqrt{3}\right)^2 = 2 - 3 = -1$

h) $\left(2 + 2\sqrt{3}\right)^2 = 2^2 + 2 \cdot 2 \cdot 2\sqrt{3} + \left(2\sqrt{3}\right)^2 = 4 + 8\sqrt{3} + 2^2 \cdot \sqrt{3^2} =$

$= 4 + 8\sqrt{3} + 12 = 16 + 8\sqrt{3}$

i) $\left(4 + \sqrt{3}\right)\left(4 - \sqrt{3}\right) = 4^2 - \left(\sqrt{3}\right)^2 = 16 - 3 = 13$

j) $\sqrt[3]{\sqrt{\sqrt[4]{2^3}}} = \sqrt[24]{2^3} = \sqrt[8]{2}$